Graduate Diploma in Systems Analysis

Shortcut▾

Overview

Next Intake	Aug 2023 (Full Time), Feb 2024 (Full-Time)
Duration	• Full-time 1 year
Application Timeline	Admissions into the GDipSA programme is competitive, Eligible students will be offered admissions on a first-come first-served basis. The average application processing period would take between 6 - 8 weeks. Applications for August 2023 admission into the full-time GDipSA should be submitted before 30 April 2023. Applications for February 2024 admissions into the full-time GDipSA should be submitted before 31 October 2023
Aptitude Test	Online: 16 March, 22 March, 31 March, 12 April and 20 April 2023 Face-to-Face: 22 March, 12 April and 20 April 2023* *Applicants based in Singapore are to take the test in NUS-ISS. Applicants based overseas can take the test online.* *The dates above are subjected to changes.*
Download Brochure	English / Chinese
Info-session	Click here for dates
Enquiry	iss-admissions@nus.edu.sg

The Graduate Diploma in Systems Analysis programme (GDipSA) is designed for non-IT graduates intending to craft a new career path in the IT industry. IT graduates and professionals who wish to advance their careers in their current field and recognise the need to equip themselves with the latest IT knowledge and skills to stay relevant may apply as well.

This is a full-time one-year programme. You can also explore the stackable pathway via the graduate certificate programme for Digital Solutions Development. This is a series of five certificates which will stack up toward the Graduate Diploma of Systems Analysis. Go to: NUS-ISS Stackable Graduate Certificate Programme in Digital Solutions Development.

Technical learning outcomes:

- User experience design
- Gather user requirements

- Systematically analyse and design feasible IT solutions
- Select the right technology
- Agile and CI/CD Practices
- Code, test and implement proposed solution in C#, ASP MVC, Java, Python and Android
- Trouble-shoot problems

Non-technical learning outcomes:

- Problem solving
- Project management
- Teamwork
- Leadership

Having graduated over 53 batches of students, many of our graduates are now prominent senior IT professionals, who have benefited from this programme. Students who embark on this hands-on programme will be exposed to lectures, workshops, laboratory sessions, projects and a 5-month internship. We have designed numerous projects into the programme. The aim is to equip them with the necessary foundation to code, test, implement and troubleshoot IT solutions covering web and mobile platforms. By the end of the programme, you will be equipped with sought-after technical skills and valuable soft skills.

Graduates of this programme may choose to upgrade your skills after gaining a few years of work experience in the IT industry. You will be fully eligible to take up a Master degree with NUS and universities. Our Master of Technology programmes, offered in full-time and part-time formats, are designed for working IT professionals and managers who wish to advance their knowledge and skills.

Modules

Graduate Certificate in Digital Solutions Development – Foundations

This unit lays the foundation for programming and developing of system of records. This course will cover programming concepts using the C# Language as the vehicle. You will learn about Object Oriented Programming and acquire the technical knowledge necessary for developing a User Interface for Business Systems using Visual Studio.Net. The curriculum also covers the implementation of client/server development on .NET data objects with Visual Studio as the client side programming tool, ADO.NET as the enabling middleware, and RDBMS as the database server. It will also include the development web application using ASP.NET MVC.

Graduate Certificate in Digital Solutions Development – Design

This course will cover the Application Development Life Cycle using object oriented development technique with UML. You will learn how to understand users needs using user experience design techniques and user requirement gathering tools. You will also acquire skills to analyse and design IT solutions that address business problems. You will also acquire basic IT project management skills based on Agile practices.

Graduate Certificate in Digital Solutions Development – Web Applications

The course imparts the techniques and engineering skills needed for the end-to-end design, architecture, implementation, persistence and testing an enterprise web application. In this module, you will learn how to develop system of engagement using Java and JS components. You will also learn how to apply these newly acquired proficiencies by developing full stack web application project using Java Enterprise Edition (Java EE) for the Server Side and Java Script for the Client Side Libraries. The course covers a wide range of design concepts, development abilities, and integration skills, from analysing the requirements to implementing a complete solution.

Graduate Certificate in Digital Solutions Development - Mobile Applications

In this module, you will learn how to design and build mobile web and native mobile apps using the Android Development Platform. Key takeaways include understanding Android programming framework, developing and packaging Android application using Android Studio. Build dynamic and reusable user interface components, store application data in Android device, use phone's camera to capture photos and videos, microphone to capture audio and Android multimedia library to playback audio (mp3) and video (mp4) files. Build threads and communication within threads, and integrate Android application with server-side functionality for full stack development.

Graduate Certificate in Digital Solutions Development - Machine Learning

Applications

In this module, you will learn how to design and build machine learning application using Python. You will develop server-side application with machine learning capability and publish server-side functionality as REST API with Python. Also, understand popular machine learning models such as k-nearest neighbours, random forest, logistic regression, k-means, naïve Bayes and artificial neural network to build and evaluate performance of machine learning models using Python.

Graduate Diploma in Systems Analysis - Capstone & Internship

This module includes the capstone project that links up all the concepts taught in the NUS-ISS Graduate Certificate in Digital Solutions Development – Foundations, Design, Web Applications, Mobile Applications and Machine Learning Applications. It also includes an internship programme where you will develop and propose IT solutions for your assigned internship company.

Learning Journey

Foundations of Programming

- Attain knowledge on basic programming and objected oriented programming with C#
- Adopt SQL Programming with Data Modelling
- Build Web applications using ASP.NET, Core, Microservices and Entity Framework

Graduate Certificate in Digital Solutions Development - Foundations

Designing Digital Solutions

- Ability to conduct user requirement through user experience design and agile practices
- Analyse and design software solutions to solve business problems
- Design software solutions which can support and integrate Business Intelligence
- Design software architecture for IOT, Cloud Architecture, Microservices, Containerisation
- Manage a project using agile practices and deliver the project as a product release

Graduate Certificate in Digital Solutions Development - Design

Developing Web Solutions

- Understand fundamentals of Java SE including lambda expressions
- Design enterprise Java EE web application using patterns and practices, resource constraints, connection pooling, etc
- Implement application layers, specific customized components, services, user roles via annotations or APIs.
- Implement server side web application using 'Model View Controller' structure
- Introduce Spring MVC and Spring WebFlux to support both synchronous and asynchronous web application architecture
- Build persistence layer with JPA repositories, using the Hibernate framework
- Use JPA Query language to access data from persistence layer and Spring Data extensions to access NoSQL data storage
- Use React JS or Angular JS framework to help reorganise device centric codes into reusable modules

Graduate Certificate in Digital Solutions Development - Web Applications

Developing Mobile Solutions

- Understand Android programming framework
- Develop and package Android application using Android Studio

Graduate Certificate in Digital Solutions Development - Mobile Applications

- Build dynamic and reusable user interface components
- Store application data in Android device
- Use phone's camera to capture photos and videos, microphone to capture audio and Android multimedia library to playback audio (mp3) and video (mp4) files
- Build threads and communication within threads
- Integrate Android application with server-side functionality for full stack development

Developing Machine Learning Solutions

- Data Analysis with Python, Numpy, Pandas, Matplotlib, Seaborn
- Publish services as REST API with Python
- Understand popular machine learning models such as k-nearest neighbors, logistic regression, k-means, naïve Bayes, artificial neural network and Time Series Modelling
- Build and evaluate performance of machine learning models using Python
- Techniques for Feature Engineering (using Pearson Correlation) and Dimensionality Reduction (using Principal Component Analysis).

Graduate Certificate in Digital Solutions Development - Machine Learning Applications

Capstone & Internship

- Gain a better understanding of the concepts learnt in the five NUS Certificates
- Complete a one-month Capstone Project with end-to-end software development life cycle
- Apply the IT skill sets in a real working environment
- Attain relevant IT working experience

NUS Graduate Diploma in Systems Analysis - Capstone & Internship

Projects & Internships

Projects and internships provide opportunities for students to put into practice what you have learnt in the classroom, making your ideas come to life in the real-world.

Our projects span across the latest technology in IT

Project	Learning Outcomes

Object Oriented Application Project

You will acquire hands-on experience in developing an extensively analysed and designed Object Oriented IT solution following the completion of the Application Development Life Cycle module.

- Apply knowledge of Object Oriented programming language (C# or Java) to code and deliver these well-defined design specifications

Internet Project using ASP.NET and Web Services

In this project, you will design and build a virtual shopping cart application using the e-Commerce Application Life Cycle and the Internet programming techniques taught.

- Apply user interface design technique for both Internet and mobile platforms
- Apply Internet and mobile-web programming techniques to design and build a mobile-friendly and effective web application

Web Project with J2EE

Students are to develop a J2EE-based system that meets all required functionalities and caters for error handling; a mobile solution on Android platform to access useful subset of the system functionality.

- Apply knowledge gained from Java Programming, Advanced Java and Building Enterprise Application using J2EE modules and Android programming

Mobile Project

Students will build a Memory Game that allows gamer to find the matching pair of images. Starting with a set of images will be extracted from websites to form image tiles. The game will end when players find the matching pair and uncover all images

- Fetch and process data from external server
- Control game flow
- Utilise multimedia features of Android – play sound, audio and animation

Machine Learning Project I

Students are required to write a CNN classifier to identify four types of fruits from images – only apples, only oranges, only pears and a mix of apples, oranges and pears (in one image). The images are of different sizes and of different proportions. Image Processing is required to resize all images to a certain size before fitting into the CNN model and apply data argumentation to 1) increase data for training and 2) remove biases due to disproportionate labels in a dataset.

- Apply neural network for classification
- Apply simple image processing techniques
- onterpret plots generated when training a neural network)

Machine Learning Project II

Students will develop various classification machine learning model using available datasets.

- Able to build machine learning model using Python and make observations on the output of the various machine learning models

Capstone Project

This project simulates a real-life IT working environment and have students test your strengths in working closely as a project team.

- Apply the project management, analysis, design, business communications and programming skills learnt
- Capture requirements through user interviews based on the Project Objective Document (User Requirement Statement)
- Produce a feasible design; code, test and implement solution on a distributed platform

Internship Project

During your 5-month internship, you will develop the versatility and flexibility to handle the unpredictable challenges of user requirements, project schedules and end product expectations of any real-life project.

- Adapt quickly to new working cultures
- Pick up new technical skills and domain knowledge where required
- Propose feasible IT solutions, develop it, and deliver them to the satisfaction of users

5-month Internship

The 5-month internship is a crucial and prized component of the GDipSA programme. Here, students are assigned to companies to work in real-life settings. Students develop the versatility and flexibility to handle the unpredictable challenges of user requirements, project schedules and end-product expectations of any real-life project. They will learn to adapt quickly to new working cultures, pick up new technical skills and domain knowledge where required, and propose feasible IT solutions, develop and deliver them to the satisfaction of users. Past internship companies our students have worked in include Accenture, Integrated Health Information Systems (IHiS), StarHub, OCBC Bank, IBM and more. Read more on Internship & Placements

Timetable & Exams

Timetable & Exams for February Intake		
Term	**Curriculum**	**Assessment**

Term 1 (Feb- Mid Apr)	**NUS-ISS Certificate in Digital Solutions Development** • Foundations • Design- Part 1 Delivered via lectures, workshops, projects	• 2x Continuous assessments (20-30%) • 2x Open book written examination (70-80%)
Term Break		
Term 2 (Mid Apr-June)	**NUS-ISS Certificate in Digital Solutions Development** • Web Applications • Design – Part 2 • Mobility Applications Delivered via lectures, workshops, projects	• 3x Continuous assessments (20-30%) • 3x Open book written examination (70-80%)
Term Break		
Capstone Project (Jul)	End-to-end software development life cycle	Project (100%)
Internship (Aug-Jan)	Internship Preparation On-Site Internship with external organisation	2x Continuous assessments (20%) Project, Presentation & Report (80%)

Timetable & Exams for August Intake

Term	Curriculum	Assessment
Term 1 (Aug-Mid Oct)	**NUS-ISS Certificate in Digital Solutions Development** • Foundations • Design- Part 1 Delivered via lectures, workshops, projects	• 2x Continuous assessments (20-30%) • 2x Open book written examination (70-80%)
Term Break		

Term 2 (Mid Oct- Dec)	**NUS-ISS Certificate in Digital Solutions Development** • Web Applications • Design – Part 2 • Mobility Applications	• 3x Continuous assessments (20-30%) • 3x Open book written examination (70-80%)
Term Break		
Capstone Project (Jan)	End-to-end software development life cycle	• Project 100%
Internship (Feb to Jul)	Internship Preparation On-site internship with external organisation	2 Continuous Assessments (20%) Project, presentation & report (80%)

Fees & Loans

Singaporeans

Total
S$10,071.25

$9,550.00 - Annual Tuition Fee (For AY 2022/2023)
$521.25 - Miscellaneous Fees

Singapore Permanent Residents

Total
S$15,771.25

$15,250.00 - Annual Tuition Fee (For AY 2022/2023)
$521.25 - Miscellaneous Fees

International Students

Total

S$38,220.25

$37,699.00 - Annual Tuition Fee (For AY 2022/2023)
$521.25 - Miscellaneous Fees

The tuition fees for academic year 2022/2023 for the above MOE government subsidised programmes are published on Registrar's Office website here. Tuition fees are reviewed yearly and thus, subjected to revisions.
Notes:

1. For students who are Singapore Citizens and Singapore Permanent Residents, the tuition fees quoted here are subsidised by the Singapore government (through the Ministry of Education, MOE) and are exclusive of prevailing GST. The applicable GST for these students is subsidised by MOE.
2. International students are not eligible for MOE subsidy. The prevailing GST (currently 8%) on the fees payable will be borne by International Students. The tuition fees quoted here are inclusive of the prevailing 8% GST. From 1 January 2024, GST will be increased to 9%.

What Do Miscellaneous Fees Cover?

Miscellaneous fees are typically levied on items that are either not covered or partially covered by tuition fee and grant/subsidy. All students, whether registered on a full-time or part-time basis, are charged the mandatory miscellaneous fees. These are due at the same time as the tuition fees. These fees help defray the costs of student activity, health services and insurance, campus shuttle service and other services.

Any queries about fees and payment, please contact us at issfinance@nus.edu.sg.

Loans and Subsidies

Students who require financing for their tuition fees may apply for the following:

- Tuition Fee Loan
- MOE Subsidy

Read up more on the above loans and subsidies

Admission & Application

Applicants must possess the following pre-requisites:

- Bachelor's degree from a recognised university
- Proficiency in the English Language (written and spoken)*
- Some work experience preferred

(*) English Language Proficiency

Applicants who graduated from universities where English is not the medium of instruction should submit TOEFL (Test of English as a Foreign Language) or IELTS (International English Language Testing System) score as evidence of their proficiency in the English language.

- **TOEFL** : Paper-based test (580)   : Computer-based test (237)   : Internet-based test (85)
- **IELTS**   : Result of 6.0

Note: Institution code of NUS-ISS for TOEFL is 2432

TOEFL and IELTS are only valid for five years after the test and the validity should not expire before the beginning of the application period for the coursework programme. *NUS-ISS accepts TOEFL iBT Special Home Edition test scores.*

All applicants are required to take an aptitude test. Shortlisted applicants will also need to attend an interview. Foreigners are welcome to apply.

How to Apply

All applicants are required to apply online for our graduate coursework programme. Please note that you will be redirected directly to NUS Online Application System.

Step 1:   You can refer to our detailed **step-by-step guide** on how to complete the online application.

Step 2:   It will take you about 30 minutes or more to complete your application. You will need the softcopies of the supporting documents for your online application. Click **here** for the supporting documents to be uploaded and additional information required.

Step 3:   You can proceed to**apply online**. Remember to **upload all the required supporting documents** under the "**Documents Upload**" section **before** you do the online submission. You can refer to our **FAQ**.

Step 4:   Please ensure you **submit** your online application(s) and make **online payment** for the application fee (non-refundable) of **S$50.00** per application (*inclusive of prevailing GST*).

Important:

1. *Applications that are **incomplete**, including missing supporting document(s), **will not be processed**.*
2. *Applicants who are found to have given inaccurate or false information will be required to withdraw from the programme.*
3. *All payments for application fee are **non-refundable***
4. *Please note that the University has not engaged any external agencies to undertake student recruitment on its behalf. Candidates interested in our graduate programmes are advised to apply directly to the University and not through any agents. Candidates who apply through agents will not have any added advantage in gaining admission and the University reserves the right to reject such applications without giving reasons.*

GDipSA Alumni Direct Admissions to MTech Programmes

GDipSA Alumni will be able to gain entry into NUS-ISS Master of Technology programmes through the following pathways:

Cumulative Average Point (CAP) attained in GDipSA	Pre-requisites into Master of Technology	Entry Pathway to Master of Technology

CAP <3.0	Not Applicable	• Standard Application Pathway
CAP >=3.0	Student meets the pre-requisites for the programme	• Direct admission with no entrance test and interview required
CAP >=3.0	Student does not meet the pre-requisites for the programme	• Advance admission with no entrance test and interview required • Student may join the next thru-train cohort once he/she meets the pre-requisites for the programme

Note: Students who obtain direct admission into the MTech Software Engineering are exempted from the *Software Analysis and Design* modules in the *Designing Modern Software Systems* GradCert. The net applicable fees for the MTech programme will be reduced to exclude the fees of the exempted courses; subsidies will also commensurate with the net applicable fees for the programme.

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[1] Subsidies do not stack. The student will receive the highest subsidy for which they are eligible. The alumni subsidy may be less than existing subsidies. **What to Bring:** No printed copies of course materials are issued.

Participants must bring their internet-enabled computing device (laptops, tablet etc) with power charger to access and download course materials.

If you are bringing a laptop, please see below for the tech specs:

	Minimum	Recommended
Processor	4-core Intel i5 (Win/Mac) or M1 (Mac)	4-core Intel i7 (Win/Mac) or M1 and above (Mac)
Memory	8GB	16GB
SSD	512GB (PCI)	512GB (NVMe)
Display	FHD	FHD
Others	Wi-Fi ready and Web-Cam	Wi-Fi ready and Web-Cam

Career Pathways

Find your fit with new opened doors

There is opportunity in Singapore for most areas of IT. What you learn in terms of IT skills is not as important as what you do with it. It is the attitude and the ability to learn from mistakes, and to contribute back to the company that you work for that is likely to make more of a difference than specific IT skills.

There are two main paths for advancement in IT - either technical or management. Technical means you continue to deepen your technical area in a domain (such as system architecture, or software engineering, etc.) and you become an expert in those areas. The other is management, where you can focus on project management, outsourcing, etc.

Our internship companies often tell us that if we can give them good students as interns, it is very likely they will get a job offer at the end of the internship.

Upon graduation, you will be trained IT specialists and leaders in real-world operating environments, equipped with invaluable problem solving, solutioning, and critical thinking skills. This would make you highly sought-after candidates of dynamic and successful multi-national corporations and institutions.

Career Prospects

- Chief Information Officer
- IT Department Director
- IT Architect
- Project Manager
- IT Consultant
- Systems Designer
- Systems Programmer
- Systems Analyst
- Applications Engineer

GDipSA alumni are pursuing their careers at these global organisations:

- Accenture
- Citibank
- CrimsonLogic
- Hewlett Packard
- Inland Revenue Authority of Singapore
- James Walter Thompson
- KPMG
- Microsoft
- Ministry of Foreign Affairs
- NCS
- OCBC Bank
- Ogilvy & Mather
- Singapore Telecommunications
- Sony
- STATS ChipPAC
- STMicroelectronics

The NUS-ISS Career Services Office helps students to match jobs based on their skills and experience. There will be bi-yearly Career Fairs held for students and graduates to network with employers. However, successful employment will depend on the employers.

The average starting salary of an IT professional depends on the degree and your previous working experience. For fresh graduates with no work experience, the starting salary ranges from S$3,600 to S$3,800. Graduates with more than 3 years of work experience can expect a starting pay of S$4,000 and above.

The most important skill is to get the job done and be persistent. You need to be broad-based and the technology does not matter.

You can get some salary benchmarks from these sites:

- Salary.sg
- Hays.com Salary Guide
- Kelly Services Salary Guide

Athalia Ho, Singapore

Media AnalystMeltwater

Graduate Diploma in Systems Analysis, 42nd Intake

"*The GDipSA programme provided a vast exposure to many d programmatic languages, project management principles, etc. preliminary base from which I can jumpstart from, considering career switch from an arts background to IT.*"

Chen Mushi Luke, Singapore

TechnologistTheSmartLocal.com

Graduate Diploma in Systems Analysis, 39th Intake
Winner of the Accenture Best Internship Project Award

"*The first and primary reason for choosing this programme wa computer technology, and NUS-ISS' graduate programme allo*

Phoebe Xie, Singapore

System AnalystiAPPS Asia Pte Ltd

Graduate Diploma in Systems Analysis, 40th Intake
Winner of the IBM Gold Medal and Book Prize

"*The programme is very detailed and covers a wide range of p languages and skills to help me develop my own mobile and w systems and get into the IT industry quickly.* "

Sarah Lee, Singapore

Software EngineerAlpsoft Technologies

Graduate Diploma in Systems Analysis, 41st Intake

"*I chose this programme because it is specially designed to tra with no IT background into IT professionals within a short time month internship and many hands-on projects also appealed t*

employers are looking for people with relevant real-world expe

Mark Wee, Singapore

ConsultantNCS

Graduate Diploma in Systems Analysis, 43rd Intake
Awarded Graduate Diploma with Distinction

"*The GDipSA programme was the most challenging and intens*
because of the steep learning curve. However, it was all worth
never experienced so much personal growth in such a short p
Enrolling in this programme is one of the best decisions I have

Athalia Ho, Singapore

Media AnalystMeltwater

Graduate Diploma in Systems Analysis, 42nd Intake

"*The GDipSA programme provided a vast exposure to many d*
programmatic languages, project management principles, etc.
preliminary base from which I can jumpstart from, considering
career switch from an arts background to IT."

Chen Mushi Luke, Singapore

TechnologistTheSmartLocal.com

Graduate Diploma in Systems Analysis, 39th Intake
Winner of the Accenture Best Internship Project Award

"*The first and primary reason for choosing this programme wa*
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Discover Life with Us

Our Students

Building up a portfolio for work and life.

Find Out More

Internship & Placements

Get a headstart with actual work experience under your belt.

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Career Services

Receive job placement opportunities with partner organisations.

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Learn from our teaching staff with more than 20 years of industry experience.

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